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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/566,838

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EXAMINER

VALENTINE, JAMI M

ART UNIT

PAPER NUMBER

2894

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DELIVERY MODE

09/15/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/566,838	Applicant(s) PULLINI ET AL.	
	Examiner JAMI M. VALENTINE	Art Unit 2894	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 August 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 18-23 and 42-45 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 18-23 and 42-45 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 December 2008 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

RCE Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 8/3/09 has been entered.

Status of the Application

2. Acknowledgement is made of the amendment received 8/3/09. **Claims 18-23 and 42-45** are pending in this application. Claims 18-19 were amended and claims 42-45 were newly presented in the amendment received 8/3/09.

Specification

3. The objection to the specification has been withdrawn in light of the amendment received 8/3/09.

Drawings

4. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference characters "113", "123" and "133" have each been used to designate the spacer layer.

- "spacer layer 113" (for example, specification amendment 8/3/09 page 2 line 3)
- "spacer layer 123" (for example, specification amendment 8/3/09 page 3 line 1)
- "spacer layer 133" (for example, original specification (2/2/06) page 10 line 22)

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5. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

6. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

7. The rejection under 35 U.S.C. 112, second paragraph has been withdrawn in light of the amendment received 8/3/09.

Claim Rejections - 35 USC § 102

8. **Claims 18-23 and 42-45** are rejected under 35 U.S.C. 102(b) as being anticipated by Fujiwara et al. (US Patent Application Publication No 2002/0054461) hereinafter referred to as Fujiwara.

9. Per **Claim 18** Fujiwara (e.g. figures 3a and 3b) discloses a magnetic device, comprising a spin valve, said spin valve comprising a plurality of layers arranged in a stack (e.g. figure 3a) including at least one free magnetic layer (31), a spacer layer (33) and a permanent magnetic

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layer (32); wherein said spacer layer includes a disordered mesoscopic structure which includes metallic nanoparticles (33a) applied to a semiconductor substrate (33b). [0021-0023]

10. Claim 18 includes "product-by-process" limitations. While product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. *In re Hirao*, 190 USPQ 15 at 17(footnote 3). The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process. *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985) See also *in re Brown*, 173 USPQ 685; *In re Luck*, 177 USPQ 523; *In re Fessmann*, 180 USPQ 324; *In re Avery*, 186 USPQ 116 *in re Wertheim*, 191 USPQ 90 (209 USPQ 254 does not deal with this issue); and *In re Marosi et al*, 218 USPQ 289 final product per se which must be determined in a "product by, all of" claim, and not the patentability of the process, and that an old or obvious product, whether claimed in "product by process" claims or not. Note that Applicant has the burden of proof in such cases, as the above case law makes clear.

11. Additionally, claim 18 recites the performance properties of the free magnetic layer (e.g. able to be associated to a temporary magnetization (MT); and the permanent magnetic layer (e.g. associated to a permanent magnetization (MP)). These functional limitations do not distinguish the claimed device over the prior art, since it appears that this limitation can be performed by the prior art structure of Fujiwara. While features of an apparatus may be recited either structurally or functionally, claims directed to an apparatus must be distinguished from the prior art in terms of structure rather than function. *In re Schreiber*, 128 F.3d 1473, 1477-78, 44 USPQ2d

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1429,1431-32 (Fed. Cir. 1997) See MPEP 2114. Additionally, these functional limitations are taught by Fujiwara in [0021].

12. Per **Claim 19**, Fujiwara discloses the device of claim 18, including where said spacer layer (33) comprises a matrix (33b) and nanoparticles (33a). (see figures 3a-3b.)

13. Per **Claim 20**, Fujiwara discloses the device of claim 19, including where said matrix (135) is a matrix of dielectric material. [0022]

14. Per **Claim 21**, Fujiwara discloses the device of claim 18, including said spacer layer (33) comprises a matrix (33b) and nanoparticles (33a); and said matrix (33b) comprises a porous dielectric material (aluminum oxide, see [0022]; porous, see figure 3b), and the nanoparticles (33a) are contained in pores of said porous dielectric material (see figure 3a-3b).

15. **Claims 22-23**, recite the intended use of the device. These functional limitations do not distinguish the claimed device over the prior art, since it appears that this limitation can be performed by the prior art structure of Fujiwara. While features of an apparatus may be recited either structurally or functionally, claims directed to an apparatus must be distinguished from the prior art in terms of structure rather than function. In re Schreiber, 128 F.3d 1473, 1477-78, 44 USPQ2d 1429,1431-32 (Fed. Cir. 1997) See MPEP 2114.

16. Per **Claim 42** Fujiwara (e.g. figures 3a and 3b) discloses a magnetic device, comprising a spin valve, said spin valve comprising a plurality of layers arranged in a stack (e.g. figure 3a) including at least one free magnetic layer (31), a spacer layer (33) and a permanent magnetic layer (32); wherein said spacer layer includes a disordered mesoscopic structure which includes metallic nanoparticles (33a) applied to a semiconductor substrate (33b). [0021-0023]; including where said spacer layer (33) comprises a matrix (33b) and nanoparticles (33a); and where said

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matrix (33b) comprises a porous dielectric material (aluminum oxide, see [0022]; porous, see figure 3b), and the nanoparticles (33a) are contained in pores of said porous dielectric material (see figure 3a-3b).

17. Claim 42 includes "product-by-process" limitations. While product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. *In re Hirao*, 190 USPQ 15 at 17(footnote 3). The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process. *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985) See also *in re Brown*, 173 USPQ 685; *In re Luck*, 177 USPQ 523; *In re Fessmann*, 180 USPQ 324; *In re Avery*, 186 USPQ 116 *in re Wertheim*, 191 USPQ 90 (209 USPQ 254 does not deal with this issue); and *In re Marosi et al*, 218 USPQ 289 final product per se which must be determined in a "product by, all of" claim, and not the patentability of the process, and that an old or obvious product, whether claimed in "product by process" claims or not. Note that Applicant has the burden of proof in such cases, as the above case law makes clear.

18. Additionally, claim 42 recites the performance properties of the free magnetic layer (e.g. able to be associated to a temporary magnetization (MT); and the permanent magnetic layer (e.g. associated to a permanent magnetization (MP)). These functional limitations do not distinguish the claimed device over the prior art, since it appears that this limitation can be performed by the prior art structure of Fujiwara. While features of an apparatus may be recited either structurally or functionally, claims directed to an apparatus must be distinguished from the prior art in terms

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of structure rather than function. In re Schreiber, 128 F.3d 1473, 1477-78, 44 USPQ2d 1429,1431-32 (Fed. Cir. 1997) See MPEP 2114. Additionally, these functional limitations are taught by Fujiwara in [0021].

19. **Claims 43-44** recite the intended use of the device. These functional limitations do not distinguish the claimed device over the prior art, since it appears that this limitation can be performed by the prior art structure of Fujiwara. While features of an apparatus may be recited either structurally or functionally, claims directed to an apparatus must be distinguished from the prior art in terms of structure rather than function. In re Schreiber, 128 F.3d 1473, 1477-78, 44 USPQ2d 1429,1431-32 (Fed. Cir. 1997) See MPEP 2114.

20. Per **Claim 45**, Fujiwara discloses that the pores can be filled with nanowires [0019], hence "nanoporous" is anticipated. Claim 45 includes "product-by-process" limitations. While product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself.

Response to Arguments

21. Applicant's arguments filed 8/3/09 have been fully considered but they are not persuasive.

22. Applicant's arguments (page 7) that the finality of the previous Office action should be withdrawn are not persuasive. MPEP 706.07(a) details when a final rejection can properly be made on a second action: "Furthermore, a second or any subsequent action on the merits in any application or patent undergoing reexamination proceedings will not be made final if it includes a rejection, on newly cited art, other than information submitted in an information disclosure

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statement filed under 37 CFR 1.97(c) with the fee set forth in 37 CFR 1.17(p), of any claim not amended by applicant or patent owner in spite of the fact that other claims may have been amended to require newly cited art." The final rejection mailed 4/1/09 did not include a rejection on newly cited art, the same prior art was applied. The rejection under 35 USC 112 second paragraph (see Final rejection paragraph 6-13) was necessitated by Applicants amendments to the claims filed 12/29/08. In the previously examined claims it was clear that the spacer element and spacer layer were the same part because of the numerical character references. Applicants 12/29/08 amendment removed those character references causing an antecedent basis issue for the use of spacer layer and spacer element. Applicants' previous amendment also added a step of chemically etching the semiconductor substrate which was not previously examined and necessitated the 112 rejection.

23. Applicants arguments (page 8) regarding whether the drawings show the spin valve as claimed are persuasive.

24. Applicants arguments regarding paragraph 9 (pages 8-9) clarify the fabrication of the spacer layer using a substrate with references to the figures and specification, however these details are not clear from the claim language, and it is noted that the features upon which applicant relies (i.e., the etched substrate can be laid onto any other substrate) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

25. Applicants arguments regarding paragraph 10 (page 9) are moot in view of the amendments to the specification.

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26. Applicants arguments regarding paragraph 11 (page 9) are persuasive. While silicon is generally thought of as a semiconductor, it is known in the art that porous silicon can be either semi-conducting or dielectric.

27. Applicants arguments regarding the applied prior art, Fujiwara (pages 10-11) are not persuasive since Fujiwara's disclosure anticipates the claimed structure. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., microstructure of the composite) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims.

28. Applicant argues that the methods mentioned by Fujiwara do not lead to the production of a material with properties similar to that of the claimed material. The "properties" of the spacer layer are not claimed. The examiner notes that the claims are directed to a product and contain product-by-process claims. While product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. In re Hirao, 190 USPQ 15 at 17(footnote 3). The patentability of a product does not depend on its method of production.

29. Applicant states (page 11) that "it is presently claimed that a semiconductor or dielectric substrate (31) is subjected to a chemical etching process..." The examiner disagrees. The claims include a semiconductor substrate but do not include a dielectric substrate.

30. Applicant argues (pages 11-12) that Fujiwara does not mention any pore or porous structure. This argument is not persuasive since Fujiwara figures 2 and 3A-B clearly show pores. Fujiwara also discloses that the pores can be filled with nanowires [0019] which are conducting

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[0022], hence anticipating the claimed structure. Applicant is reminded that the claims must be given their broadest reasonable interpretation.

31. Applicant argues (page 12) that it isn't possible to ascertain the structural, electrical or magnetic properties of the spacer layer of Fujiwara. This argument is not persuasive since the structure is anticipated and since the structural, electrical or magnetic properties of the spacer layer are not claimed

32. Applicant argues (page 12) that nanowires grown in the pore of a porous templates are different from nanowires grown by other methods, i.e. codeposition, and provided a reference describing the way electrodeposition in the nanopores can be controlled for tailoring the crystal structure. However the claims do not require electrodeposition. Further, even if the claims were amended to include a fabrication method of electrodeposition, that would be a product by process limitation. Hence this argument is not persuasive.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JAMI M. VALENTINE whose telephone number is (571)272-9786. The examiner can normally be reached on Monday-Friday 9am-6pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kimberly Nguyen can be reached on (571) 272-2402. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/JMV/

/THANH V. PHAM/

Primary Examiner, Art Unit 2894